TG   6   A computer simulation is designed to draw random samples of size n from a large dataset. The proportion of the population that exhibits a certain characteristic is $p = 0.25$.

If $\hat{p}$ represents the sample proportion exhibiting the characteristic under investigation, find the largest* sample size that should be used so that the standard deviation of $\hat{p}$ is at least 0.01.   * NESA has 'smallest' … projectmaths

$n = ?$ and $p = 0.25$

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}} \geq 0.01$$

$$\sqrt{\frac{0.25(1-0.25)}{n}} \geq 0.01$$

$$\frac{0.1875}{n} \geq 0.0001$$

$$0.0001n \leq 0.1875$$

$$n \leq 1875 \qquad \therefore \text{ the sample size is 1875.}$$